

REMARKS

Summary of the Office Action and this Amendment

On page 3 of the office action, the examiner states:

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guruprasad Bhat. (Bhat hereinafter) (US PGPub No. 2003/0055808) in view of Weber et al. (Weber hereinafter) (U.S. PGPub No. 2002/0184360) further in view of Booth et al. (booth hereinafter) (U.S. Patent No. 6,493,719).

In this Amendment, the applicant has amended claims 1, 4, 19, and 20. Support for the amendments can be found, for example, in the specification in paragraphs 35-41. No new matter has been added. Claims 1-20 are now pending in the application.

Claim Rejections - 35 U.S.C. 103

a. Legal Criteria 35 U.S.C. 103

“Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.”

Graham v. John Deere Co. of Kansas City, 383 U. S. 1, 17-18 (1966).

b. Discussion Regarding the 35 U.S.C. 103 Rejections

As mentioned above, in the office action all of the claims were rejected, under 35 U.S.C. 103(a). Claims 1, 4, 19, and 20 are the independent claims currently pending in the application. The applicant has amended all of the independent claims herein, and the applicant submits that all of the independent claims as amended herein are nonobvious in view of the references, and include limitations that are not described in the references.

Claims 1, 4, 19, and 20:

Claims 1, 4, 19, and 20, as amended herein, include the following limitations:

wherein obtaining information from the CIMOM includes, given the unique ID for the Disk Array System, obtaining, responsive to receiving the *single inquiry* from the CIM Client Application: information regarding all component Storage Pools of the Disk Array System and information regarding all component Volumes of the Disk Array System, wherein the Disk Array System has properties spanning a plurality of separate CIM Objects in the CIMOM;

Referring to the Booth reference, on page 7 of the office action, the examiner states:

However, Booth teaches “wherein obtaining information from the CIMOM further includes obtaining, in one step” as the CIMOM then communicates with one or more sources of the information, known as providers, to return an appropriate reply. The CIMOM is intelligent in that it can decompose queries into requests from multiple providers and synthesize the results into a single response,

filter excess information, work with the capabilities of the providers, and so forth (Booth Col 1, lines 42-49). Examiner interprets the single response as obtaining information in one step.

To further clarify the claims, the applicant has amended the claims herein such that the “one step” wording is not included. Further, the applicant submits that Booth does not disclose “obtaining (from a CIMOM), responsive to receiving the *single inquiry* from the CIM Client Application: information regarding all component Storage Pools of the Disk Array System and information regarding all component Volumes of the Disk Array System, wherein the Disk Array System has properties spanning a plurality of separate CIM Objects in the CIMOM” as recited in the claims as amended herein. Rather, Booth is directed to “an API (that is provided that transforms scripts passed from a scripting engine into the existing ‘low-level’ COM syntax required for CIMOM queries.” Booth, at col. 2, lines 1-4.

Although the background section of Booth refers to CIMOMs, the applicant wishes to draw the examiner’s attention to some of the pertinent shortcomings associated with CIMOMs, which are discussed in paragraphs 4-8 of the background section of the applicant’s instant application, as follows:

[0004] The CIM Objects mentioned above may be managed by a CIM Object Manager (CIMOM), also known as a CIM Server. A storage management software application, such as IBM Tivoli Storage Resource Manager (ITSRM), can use a CIM Client to connect to a CIMOM, to retrieve information about the storage entities that the CIMOM manages, and also to perform active configuration of the storage entities. Storage management

software that uses a CIM Client may be called a CIM Client Application.

[0005] CIM Client Applications use a CIM Client API (Application Programming Interface) to communicate with a remote CIMOM. There are several CIM Client APIs available (SNIA, Pegasus, Java WBEM Services), and they all are similar in that the methods available to the CIM Client Application deal with the use of meta-data. CIM Client APIs include methods for the following common tasks:

- Get all instances of a certain CIM_Class
 - Example: Get all ComputerSystems
 - Example: Get all Hosts
- Get associated entities given a certain entity
 - Example: Get All StorageVolumes that are defined in a specific Disk Array StorageSystem
 - Example: Get the StoragePool that a particular StorageVolume is allocated from.

[0006] Using the CIM Client API to obtain commonly needed information from the CIMOM typically requires an excessive number of steps. As an example, Disk Array Storage Systems are modeled as ComputerSystems. The ComputerSystem's Dedicated property is used to identify the ComputerSystem as a Switch, Host, Disk Array System, or some other type of computer system. In addition, certain Disk Array information, such as Location, Model, and ProductID, are not modeled as properties of a Disk Array ComputerSystem, but rather as properties of objects associated to the ComputerSystem. Thus, to enumerate all Disk Array Systems and to get complete information about their properties, the following elaborate process is required:

1. Enumerate instances of Computer Systems;

2. Check each ComputerSystem's Dedicated property to identify if it is a Disk Array System;
 3. Get the pertinent properties of the Disk Array Computer System, such as Name, Description, and Status;
 4. Get the associated PhysicalPackage object;
 5. Get the Product object that is associated to the PhysicalPackage object;
 6. Get the pertinent properties from the Product object, such as Name, Version, and Vendor;
 7. Get the Location object that is associated to the PhysicalPackage object; and
 8. Get the pertinent location information from the Location object.
- Thus, this process requires an overly complex set of steps to discover and get the properties of Disk Array Computer Systems.

[0007] Additionally, when using the CIM Client API, it is not possible to get information about a top-level entity and all of its components in one step. Component entities are modeled as separate objects, so an extra step is required to get information for each additional type of component object that the CIM Client Application is interested in. To get information about a Disk Array System and information about a specific subset of its components (Volumes, Storage Pools, FCPorts), the CIM Client must perform the following operations:

1. Get information about the Disk Array System as described above;
2. Get the associated StorageVolume objects through SystemDevice associations;
3. Get the associated StoragePool objects through HostedStoragePool associations; and
4. Get the associated FCPort (Fibre Channel Port) objects through SystemDevice associations.

Thus, the process for obtaining information about a Disk Array System and its components is overly complex.

[0008] In summary, known methods for using CIM Client Applications to obtain information pertaining to a single storage entity that may be distributed through several objects in the CIM /SMIS model, are complex and require too many steps.

Additionally, known methods for CIM Client Applications to obtain a top-level object and all of its components are excessively difficult. Further, with known methods, CIM Client Applications are unable to easily retrieve a complete view of a top level object and its components, because WBEM (or CIM-XML) only allows for requests for targeted pieces of information.

Thus, the prior art teaches that using a CIM Client API to obtain commonly needed information from the CIMOM typically requires an excessive number of steps, and the references do not disclose the following claim limitations:

wherein obtaining information from the CIMOM includes, given the unique ID for the Disk Array System, obtaining, responsive to receiving the single inquiry from the CIM Client Application: information regarding all component Storage Pools of the Disk Array System and information regarding all component Volumes of the Disk Array System, wherein the Disk Array System has properties spanning a plurality of separate CIM Objects in the CIMOM;

Also, the applicant submits that additional limitations of the independent claims are not described in the references. For example, claim 4 is very lengthy and includes numerous limitations that are not

disclosed in the references, and the applicant submits that claim 4 is not obvious in view of the references.

In conclusion, the applicant submits that all of the independent claims as amended herein are nonobvious in view of the references, and include limitations that are not described in the references. Consequently, the applicant submits that the claim rejections should be withdrawn.

Amendments, and Dependent Claims in General

The applicant submits that all of the dependent claims are novel and nonobvious for at least the reasons discussed above with regard to the independent claims. Some of the claim amendments in this amendment were made to clarify the wording and to correct typographical errors.

Conclusion

In summary, the applicant respectfully submits that the claims as presented herein are novel and nonobvious. In conclusion, the applicant respectfully submits that the application is in condition for allowance, and the applicant requests reconsideration and further examination, and allowance of the application. Any additional fees required in connection with this amendment that are not specifically provided for herewith are authorized to be charged to Deposit Account No. 09-0466 in the name of International Business Machines Corporation.

Respectfully submitted,

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